

REMARKS

Claims 1-6 and 9-14 are pending in this application. Claims 1 and 3-6 are directed to the elected invention. Claims 2 and 9-14 are directed to a non-elected invention and may be cancelled by the examiner upon the allowance of the claims directed to the elected invention.

Claims 1 and 3-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Application No. 2001/340078 to Satoshi et al. (hereinafter also referred to as “Satoshi”) in view of International Publication No. WO 96/25509 to Naylor et al. (hereinafter also referred to as “Naylor”). The cited references do not render obvious claims 1 and 3-6 for reasons discussed herein below and those in the Response after Final Office Action filed October 4, 2010.

I. Discussion of Microorganisms in JP2001/340078 to Satoshi et al. and WO 96/25509 to Naylor et al.

Satoshi describes a microorganism which can produce copolyesters when incubated with natural oils or fats as a carbon source.

On the other hand, Naylor at lines 2-12 on page 4, describes that when a microorganism is incubated with natural oils or fats as a carbon source, copolyesters are not produced, and if the natural oils or fats is the sole carbon source in step (e), the produced PHA (polyhydroxyalkanoate) is substantially or wholly a PHA homopolymer. This is because the microorganism used in Naylor can produce copolymers only when two or more species of carbon source are used together.

Thus the microorganisms used in Satoshi can produce copolymers from a sole carbon source, while the microorganisms used in Naylor produces only homopolymers from a sole carbon source.

II. Discussion of lack of motivation to control carbon source in Satoshi

In Satoshi, the microorganisms are grown with natural oils or fats as a carbon source. As described on page 10, lines 6-17 of the present specification, it is preferred that the supplied amount of oils or fats to the culture medium is controlled, considering the cellular toxicity of the fatty acids which are produced in the hydrolysis of the oils or fats.

However, as described in Table 2 in Satoshi, the natural oils or fats are significantly less toxic to the cells compared to the case where fatty acids are contained in the culture medium at a high concentration. In Table 2, when hexanoic acid is present in the culture medium at the concentration of 5 w/v%, the cells are not grown, but even when the palm oil is present at the same concentration, growth of the cells is not at all influenced. Thus the strict control of the addition of natural oils or fats is not essential in Satoshi.

III. Discussion of control of carbon source in Naylor

Naylor describes from line 28 on page 2 to line 2 on page 3 that the carbon source is normally fed gradually so as to avoid exceeding the provision of oxygen or to avoid a toxic concentration of the carbon source. According to lines 6-9 on page 3, it is the concentration of fatty acids, but not that of oils and fats, that should be strictly controlled.

Satoshi uses natural oils or fats, and strict control of the oils and fats is not essential as mentioned above. Since Naylor suggests the importance of only fatty acids, it is not reasonable to recognize that motivation exists to apply the supply method of Naylor to the method of Satoshi.

Further to control the concentration of the carbon source, the addition of fatty acid relative to the amount of culture medium is controlled. This is distinct from the specific substrate feed rate defined according to the present invention which is calculated based on the supply amount of the oils or fats per hour in relation to the net weight of the cells. In the method of the present invention, in order to keep the specific substrate feed rate, supply amounts of oils or fats per volume of the culture medium should be increased according to the accumulation of the net weight of cells. The specific substrate feed rate used in the method of the present

invention is not described in Naylor. Control of the monomer composition of the copolyesters is also not described in Naylor.

IV. Conclusion

Satoshi is distinct from Naylor in the microorganism which is used for producing copolyesters. Also, Naylor does not describe production of copolyesters with natural oils or fats as a sole carbon source, or controlling the monomer composition of the copolyesters.

Importantly, the method of the present invention achieves the effect that the monomer composition of the copolyesters can be controlled without changing the species of the used carbon source. This effect is achieved only when the specific substrate feed rate is controlled in the production of PHA using a microorganism which can produce copolyesters with natural oils or fats as a sole carbon source.

It is not reasonable to recognize that this effect is expected merely because certain subject matter of the present invention might be described in Satoshi or Naylor.

The mere fact that the cited art may be modified in the manner suggested in the Office Action does not make the modification obvious, unless the cited art suggests the desirability of the modification or adequate rationale exists to do so. No such suggestion appears in the cited art in this matter nor has the requisite rationale been adequately articulated. . The Examiner's attention is kindly directed to *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007); *In re Lee* 61 USPQ2d 1430 (Fed. Cir. 2002), *In re Dembiczak et al.* 50 USPQ2d. 1614 (Fed. Cir. 1999), *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984), *In re Laskowski*, 10 USPQ2d. 1397 (Fed. Cir. 1989) and *In re Fritch*, 23, USPQ2d. 1780 (Fed. Cir. 1992).

Also, the cited art lacks the necessary direction or incentive to those of ordinary skill in the art to render a rejection under 35 USC 103 sustainable. The cited art fails to provide the degree of predictability of success of achieving the properties attainable by the present invention as discussed above needed to sustain a rejection under 35 USC 103. See *KSR Int'l Co. v. Teleflex, Inc.*, *supra*; *Diversitech Corp. v. Century Steps, Inc.* 7 USPQ2d 1315 (Fed. Cir. 1988), *In*

re Mercier, 187 USPQ 774 (CCPA 1975) and *In re Naylor*, 152 USPQ 106 (CCPA 1966).

Moreover, the properties of the subject matter and improvements which are inherent in the claimed subject matter and disclosed in the specification are to be considered when evaluating the question of obviousness under 35 USC 103. See *KSR Int'l Co. v. Teleflex, Inc.*, supra; *In re Sullivan*, 498 F. 3d 1345 (Fed. Cir. 2007), *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d. 1923 (Fed. Cir. 1990), *In re Antonie*, 195, USPQ 6 (CCPA 1977), *In re Estes*, 164 USPQ 519 (CCPA 1970), and *In re Papesch*, 137 USPQ 43 (CCPA 1963).

No property can be ignored in determining patentability and comparing the claimed invention to the cited art. Along these lines, see *In re Sullivan*, supra, *In re Papesch*, supra, *In re Burt et al*, 148 USPQ 548 (CCPA 1966), *In re Ward*, 141 USPQ 227 (CCPA 1964), and *In re Cescon*, 177 USPQ 264 (CCPA 1973).

In view of the above and the comments presented in the Response After Final Office, consideration and allowance are respectfully solicited.

In the event the Examiner believes that an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

The Office is authorized to charge any necessary fees due with this paper to Deposit Account No. 22-0185, under Order No. 21581-00476-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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